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ORIGINAL RESEARCH

A Study on Communication Practices in Reducing Non-Communicable Diseases in Bahir Dar City, Ethiopia

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Background: Non-communicable diseases (NCDs) pose special challenges in developing countries In Ethiopia, the growing NCD burden has raised a public health concern with significant social, economic, and developmental effects. Thus, the study sought to examine health communication practices in addressing the NCDs in Bahir Dar City of the Amhara Region of Ethiopia.

Methods: A qualitative case study was conducted from January to April 2023. The study employed in-depth interviews, focus group discussions, and observations to gather data from health extension workers, NCD experts, and NCD focal persons about their experiences and perspectives regarding NCD prevention and control. The participants were purposively selected, and a thematic analysis technique was employed to analyze the data.

Results: The study found that several health communication strategies, such as health promotion, training and creating model households, screening, referrals, follow-ups, rehabilitation services, and activities reporting were employed. Nevertheless, there was a lack of consistent, reliable, and long-lasting and professional health communication regarding NCD prevention and management. Some of the challenges contributing to such deficient practices were overloading HEWs with various tasks, allocating many households to a single HEW, shortage of screening tools, shortage of financial and human resources, weak interdisciplinary collaboration, COVID-19, and recurrent conflicts in the city and the region. Above all, lack of health communication skills affected the health interventions. Concerning communication methods, one-to-one communication was frequently employed, while mass media and social media were rare. Generally, NCD communication, in particular, and health communication, in general, did not receive priority as other health-related activities in the city.

Conclusion: The study found that there were poor health communication practices in preventing and controlling NCDs. Thus, professional practice of health communication about NCDs must be prioritized, and emphasis should be given to inter-sectoral collaborations. Prioritizing financial and human resources is also essential for effective NCD communication.

Keywords: health communication, health extension workers, communication strategies, communication methods, non-communicable diseases, risk factors

Introduction

The increasing prevalence of Non-communicable Diseases (NCDs) in Ethiopia poses a significant public health challenge with profound social, economic, and developmental implications.[1,2] However, the term ”NCDs” has been expanded to include a broader range of health issues; the study focused on the four most common and prominent NCDs, which are diabetes, cancer, chronic respiratory diseases, and cardiovascular diseases.[1,3] Nonetheless, there is a lack of well-documented data in Ethiopia,[4–6] the limited evidence shows that “NCDs cause 42% of deaths, of which 27% are premature deaths, that is occuring before the age of 70”.[5] Ethiopia is among the nations experiencing the fastest shift in the burden of NCDs when compared to low-income Sub-Saharan nations like Nigeria and Kenya, but it is also one of the least prepared.[7] Additionally, the study projects a 65% increase in Ethiopia’s NCD burden by 2040.

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More significantly, Ethiopia is witnessing a rapid rise in NCDs due to the increasing consumption of unhealthy products like alcohol, tobacco, and chewing khat, as well as a rapid shift in lifestyle towards consuming sugar-sweetened beverages and trans fats, especially among youth.[8] Most notably, Amhara National Regional State, of which Bahir Dar city is the capital, has been rated as a risky region with a high perceived prevalence of unhealthy eating habits, sedentary lifestyles, and excessive alcohol use.[9,10]

NCDs are not only a leading cause of disease and early mortality, but they also obstruct Ethiopia's rapid economic development. In 2017, NCDs caused the country to lose 31.3 billion birr (US$ 1.1 billion) in financial losses or 1.84% of its GDP annually. NCD hampers Ethiopia's development in a number of ways, such as lost productivity, catastrophic medical costs that devastate family members, and then school dropouts to care for sick family members.[11,12] In this connection, Ethiopia's Minister of Health Lia Tadesse (April, 2023) emphasized that NCDs will cause a substatntial impact on the national economy and may eventually undermine the success registered in the health sector if not adressed appropriately.

Collectively, these show that NCDs have a detrimental effect on the nation's overall development[9,11,13] and, in the end, will be a threat to reaching the Sustainable Development Goals by 2030.[14]

SDG 3.4 requires countries to commit to reducing premature mortality from NCDs by one-third through prevention and treatment[8] since the management of NCDs and the associated costs are highly variable and huge.[15] As a result, the Ethiopian government has introduced a preventiion-based health policy, which is primarily implemented at the middle and primary level of health centers,[16,17] and NCDs have gained priority in the country's health agenda. The Ethiopia Ministry of Health (MOH) adapted the first National Strategic Action Plan (2014–2016) to strengthen global and national responses to prevent and control NCDs, and considered them in the Health Sector Transformation Plan (HSTP) of the country as one of the prioritized disease control areas.[18] Concomitantly, the Health Extension Program (HEP) was updated to address the rising NCD burden by emphasizing the four primary NCDs and the risk factors associated with them.[1,12] The HEP "will play a central role in promoting the health of the community through regular health promotion and disease prevention".[19] After realizing its effectiveness, the government expanded the program to the urban community, and there is further realization that health education and communication are significant cross-cutting issues for NCD prevention and control.[20]

Health education and communication are critical to all facets of health promotion and disease prevention[21] because they raise awareness, alter perceptions, and reinforce behavioral changes.[22–24] Consequently, the Ethiopian Ministry of Health puts health promotion and disease prevention activities as a second priority area to "Promote healthy lifestyles and reduce exposure to modifiable risk factors for NCDs".[1] Consecutively, the Ethiopia National Health Promotion and Communication Strategy Framework (2016–2020) underscored that health improvements in the country would not be posssible without the improved awareness and behaviour change among the people as a result of information, communication, social mobilization, and advocacy.[25]

Conversely, poor communication strategies and a lack of awareness campaigns aggravate the effects of communicable and non-communicable diseases in low-income countries.[27] Therefore, strengthening public education and awareness on NCDs and their risk factors is one of the significant ways to the improvements of health and well-being of Ethiopians who currently, or in the future, may suffer from the burden of NCDs.[18]

On the contrary, despite data showing that the majority of NCD risk factors can be avoided or controlled with practical and affordable interventions,[28] over 86% of deaths in LMICs, such as Ethiopia, are attributable to these diseases.[5,11,29–31] This implies that health promotion, which is one of the primary cost-effective interventions, has not received appropriate attention. Furthermore, considering the pervasive health issues throughout the nation and the city in particular, the researchers firmly believe that interactive, evidence-based, well-planned, and effective health communication plays a pivotal role in reducing NCDs and can facilitate sustainable development; however, merely raising awareness of specific NCDs and their risk factors, is by no means a cure-all for the health challenges we face. It is also believed that research on health communication could help identify reliable and appropriate sources of useful health data that consumers can access and gather information regarding the obstacles and constraints they encounter in the current healthcare system.[27] On the other hand, there is a paucity of studies on health communication generally, and NCD communication specifically, in Ethiopia and the Amhara region.

Therefore, researching health communication practices in preventing and controlling NCDs in the Amhara region of Ethiopia, specifically in Bahir Dar city, was essential. In other words, the purpose of the study was to address the following research questions: Q1. What communication strategies were employed in the city to prevent and manage NCDs? Q2. Which communication methods were commonly used and effective to raise awareness about NCD prevention and control in the city?

Theoretical Framework

Bandura's Social Cognitive Theory (SCT) is particularly beneficial for health promotion studies that focus on behavior modification.[32] The authors also concluded that STC-based interventions positively influenced health outcomes and effectiveness. The SCT considers both the personal and socio-structural aspects of health because a comprehensive approach to health promotion demands changing the practices of social systems that have pervasive determinantal effects on health rather than concentrating solely on changing the habits of individuals.[33] In the same vein, contemporary health promotion extends beyond recommending best practices. It encompasses initiatives to modify social and physical environments within communities. It also entails creating and promoting health-promoting policies, including financial incentives. Likewise, disseminating information about NCD prevention and control involves teaching people about a variety of social and environmental factors in addition to healthy habits. Consequently, social cognitive theory has been used as a frame of reference for the current study.

Method

Study Design, Setting and Period

Health communication research should utilize both quantitative and qualitative methods; however, qualitative research not only complements quantitative methods in health communication research but also allows the researcher to get to the core of the problems in the community. More importantly, qualitative approaches have the potential for a profound understanding of the why and how of health-related behaviors that may not be difficult to accomplish with quantitative methods.[34] Therefore, a qualitative research method combined with a case study design was employed to examine NCD prevention and control communication in Bahir Dar city from January to June 2023. The case study is used to generate, clarify, characterize, or investigate a comprehensive, multifaceted understanding of a complicated problem in its real-life setting.[35] Moreover, the case study design is particularly appropriate for examining a field in which relatively few investigations have been conducted.[35,36] More significantly, the complex nature of health communication requires thoroughly examining an event or phenomenon in its natural setting. Concurrently, the researchers argue that using qualitative approach will fill some methodological gaps in the health communication research tradition which is dominated by quantitative research. The study followed the COREQ guidelines for reporting the qualitative studies in this work.[37]

Sampling and Participants

The study included ten Health Extension workers (HEWs) and five NCD focal persons from five randomly selected Primary Health Centers (PHCs) in the city, and three NCD experts in the city administration health office to capture the perspectives and experiences from multiple PHCs and personalities, potentially incorporating variations in practices, resources, and contexts. Comprehensive/census sampling was used for NCD experts since they are few. Concerning NCD focal persons, five NCD focal persons were selected from the five randomly selected PHCs since each primary health center has one NCD focal person. The ten HEWs were chosen from the five randomly selected PHCs with the help of the health centers' NCD supervisors, who know the HEWs and their performance in detail. The study employed purposeful sampling to ensure that the HEWs selected for the study had pertinent knowledge and experience about the subject matter. Besides, researchers determined the sample size based on a theoretical saturation point in the data collection period, which occurs when new data or themes stop emerging from additional participants to ensure that the sample size is adequate to meet the study's objectives. Thus, interviews continued until the researchers confirmed no new data emerged.

Inclusion and Exclusion Criteria

Health extension workers and NCD focal persons who served for one or more years were included in the study's population. However, all NCD experts participated in the study because they were few. That means health extension workers and NCD focal persons who had less than one year of work experiences were not included in the population.

Data Collection Tools and Procedures

Primary data were gathered from research participants and observation of some activities. Accordingly, the study employed in-depth interviews, focus group discussions (FGD), and field observation notes as data collection methods using a semi-structured guide to facilitate the interviews and the discussions. Furthermore, phone interviews were conducted for more explanations. The researchers recorded all interviews and conversations and also took written notes. Observations (field notes) were made to get additional and actual practices on NCD prevention and controlling communication in the city.

Data Analysis Procedures

The study employed a thematic analysis technique. By utilizing techniques for data interpretation[38] and procedures for data analysis,[39] all the data were transcribed and read multiple times before being coded. The analysis continued till saturation, where the emergence of new themes or sub-themes became null. Finally, a bunching of themes in each research question was made and written. All the data were transcribed and read several times before thematic coding. The data were prepared and organized for analysis, and then the data were transcribed and translated into English language, and thematically analyzed. Transcriptions and translations were cross-checked for accuracy and consistency by two independent persons.

Trustworthiness

Concerning trustworthiness, several strategies such as triangulation, extended engagement, peer debriefing, and external checks can be applied[40] to ensure the trustworthiness of the results. For this study, interviews with key informants were supplemented with FGD and observations to triangulate the data. Pilot testing of the interview and discussion guides was done to improve both the questions and moderating abilities. The researchers used prolonged time for data collection to ensure they had enough time. Besides, peer debriefing sessions helped to facilitate the final data analysis.

Results

Socio Demographic Characteristics

As shown in Table 1, eighteen individuals participated in the study. Most of them were married women, middle-aged, and between the ages of 26 and 40. The majority of them had six years or more of work experience. Fifty percent of the participants had a bachelor's degree in science. Eight of them have completed level four (IV).

Health Communication Strategies in Reducing NCDs

Evidence-based health communication and best practices can help people adopt healthy and positive behaviors. With this in mind, participants of the study were asked to identify their main activities to prevent and control NCDs in the city. Before answering the question, most study participants described that the prevalence of NCDs and associated risk factors is increasing alarmingly in the city and the region, and becoming a critical health and development challenge, particularly for people with low socioeconomic status. Subsequently, during the interviews and focus group discussions, most study participants mentioned their main activities for the prevention and control of NCDs, such as health education and communication, training and creating of model households, early detection and screening of high-risk individuals, providing referral services with more complex needs to health centers and receiving feedback, follow-up, and rehabilitation services, and reporting regular works even if they felt that the prevention and management of NCDs were somehow being overlooked.

Table 1 Socio-demographic Characteristics of Participants

Participant Characteristics		N (%)	Participant Characteristics		N (%)
Sex	Male	3 (17%)	Educational status	Level 1	0
	Female	15 (83)		Level 2	0
Age	18–25 years	3 (17%)		Level 3	1 (6%)
	26–30 years	7 (39%)		Level 4	8 (44%)
	31–35 years	6 (33%)		BSC	9 (50%)
	≥36 years	2 (11%)		1–5 years	4 (22%)
Marital status	Married	15 (83%)	Work Experience	6–9 years	12 (67%)
	Unmarried	2 (11%)			
	Divorced	1 (6%)		≥10 year	2 (11%)
	Widowed	0			

Health Education and Communication

The study found that HEWs and other healthcare workers were willing to provide health education and raise awareness in the community in which they live. Therefore, the majority of study participants believed that education and awareness about NCDs and their main risk factors were provided to the community and had an impact on health-related behavior changes. For instance, one of the HEWs mentioned:

> Although I am busy with other health programs such as HIV/AIDS, hygiene, immunization, family planning, maternal and child health care, and related activities, I inform beneficiary families about NCDs, especially diabetes and cardiovascular diseases and their related risk factors; for example, high salt intake, physical inactivity, excessive alcohol/khat consumption, and empower them to change their behavior and lead a healthy lifestyle during my home-to-the home visits. AndI noticed some positive behavior changes. By the way, I love serving my community; I feel like I am serving my mothers and sisters because I come from the community I am currently serving. (HEW3-IDI)

In addition, participants mentioned that health education on the prevention and control of NCDs was provided to the beneficiary households through home-to-home visits even though behavioral change in the community is a process and not an event, and awareness of the community on NCD and its impact was minimal.

> I work on behavior change strategies such as health education to prevent and control NCDs and sensitize my beneficiaries' families on the main risk factors of NCDs during home-to-home visits as part of other health programs. However, prevention and control of NCDs require much effort as public awareness of NCDs and their impact at both household and community level is low. Thus, most NCDs persist for a long time without symptoms visible and are called the silent killer (HEW9-IDI).

In contrast, study participants often complained that they were engaged in other competing, unplanned activities instead of educating and informing the public about NCDs and their risk factors. These led them to engage in many tasks without a defined scope and made them focus on ordinary responsibilities instead of health education and awareness raising in the community.

> Random or unplanned activities such as vaccination campaigns and other social activities by the Ministry of Health and/or regional/administrative health departments keep us busy and engage with multiple tasks without defined responsibilities. These hectic activities hinder our role in educating and communicating to the community about NCDs and their risk factors based on our regular programs. (HEW6-IDI)

In this sense, an NCDs expert stated,

> Although the higher officials at all levels of health departments want positive changes in the fight against NCDs, little attention has been paid to the communication side as they focus on unexpected activities such as prevention and vaccination of COVID-19. (EXP2-IDI)

Similarly, the participants from NCD focal persons stated that due to a lack of budget and skilled professionals, they focus on triage and screening individuals over 30 years who may be at risk for NCDs rather than providing education on the prevention and control of NCDs (NCD focal 3-FGD). Other FGD participants explained that their focus was not on providing health education on NCD prevention and control, but on identifying cases of NCDs.

> We try to identify patients who come to our health center when their case involves NCDs through a triage process and treat them accordingly rather than teaching them how to prevent and control NCDs and their associated risk factors. Then, we create a linkage with other clinical nurses for further testing and treatments. (NCD Focal1-FGD)

Study participants again mentioned that assignments of more than the expected beneficiary households to a single HEW challenged the health communication practices targeted at preventing and controlling NCDs. They reported that according to the revised UHEP, one HEW should be assigned to between 330–500 households and visit 12–15 households daily. Despite the recommendation, most HEWs were assigned to more than 800 households, which made health education and communication challenging for them to finish their work on schedule.

> Allocating more households to a single HEW obstructed the communication practices on preventing and controlling NCDs. For instance, although one HEW should be assigned to 330-500 households and visit 15-20 households daily, most HEWs are assigned to more than 800 households. It takes more than two months for each HEW to conduct home-to-home visits and provide health education to all these households. (HEW10-IDI)

The participants repeatedly complained that the COVID-19 pandemic severely affected health education and awareness raising on NCD prevention and control since most of the healthcare workers were busy with the prevention and control of the pandemic.

> Frankly, since the beginning of the COVID-19 pandemic, we have been mainly concerned with prevention and vaccination against COVID-19 and not with our permanent tasks, namely education and awareness raising in the community to behavior change. Overall, COVID-19 dominates and challenges most of our usual tasks, especially NCD prevention and control activities. (HEW2-IDI)

Furthermore, during data collection, the researchers observed that vaccination campaigns, especially COVID-19 vaccinations (Phase 1, Phase 2, and booster vaccination), were very challenging because all HEWs and other healthcare experts had been there for a long time (more than six months) and required the researchers to travel door-to-door with health experts who provided vaccination services.

Most significantly, participants said that conflict in the region and the city completely paralyzed the education and communication activities to reduce the adverse effects of NCDs and their associated risk factors.

> However, education and communication are not yet fully effective even before. After the conflict began in the region, including Bahir Dar city, we could not provide health education or inform the community about NCDs and their risk factors because we, health professionals, and the communities in the city are under pressure. (HEW4-IDI)

Social and Community Mobilization

The study found that HEWs conducted social and community mobilization activities and empowered the community to minimize the risk factors of NCDs.

> We organized social mobilization events to empower the people in our community to prevent and control NCDs and minimize the risk factors. By bringing the community together in their local areas, we supported awareness-raising campaigns about the advantages of exercising, reducing alcohol consumption, eating a balanced diet, and living in non-smoking areas. (HEW4-IDI)

Two of the discussants (NCD focal persons) explained that in collaboration with HEWs, they had monthly social mobilization sessions to educate and raise awareness about NCDs and their associated risk factors in the health center on the first Tuesday in each month because education and communication help people gain the knowledge, skills, and abilities to manage their conditions. In addition, the researchers observed two monthly awareness creation sessions by NCD focal persons. NCD focal persons had taught about the negative impacts of the common NCDs and their risk

factors for those who came to the health centers. The audience listened attentively and asked questions and clarifications on the education of how to prevent and control NCDs. After explanations, the focal persons screened all participants of the sessions and informed them about their health status. Then, the healthy people were encouraged to maintain their condition. However, people at risk were advised to take measures to minimize the risk factors involved. Finally, the HEWs concluded by announcing the upcoming programs.

An expert further clarified that

> By mobilizing the city administrative health department staff, awareness was created about NCDs and related risk factors, and employees had the opportunity to know their health status at their workplace. (NCD expert2, IDI)

Experts also mentioned that they engaged the communities through awareness-raising campaigns to prevent and control NCDs, which were carried out in cooperation with non-governmental organizations, HEWs, transport authorities, and other relevant parties. Besides, the experts provided free screenings and vaccinations during the campaigns. One of the experts explained:

> Every month, we provide health education about NCDs and their associated risk factors under the banner of "Car-Free Streets" once a month, and the streets were closed for a few hours on the action days. We also use 'International Health Days' like Diabetes Day and Heart Day, to promote education and raise awareness about NCDs. Leaflets, pamphlets, and brochures were distributed during the campaigns to increase public awareness of NCDs and their associated risk factors. Additionally, free blood pressure and diabetes screenings were provided. (NCD Focal5, FGD)

The participants added that they raised awareness about NCDs; for instance, cancer, and how to prevent them by mobilizing schools' community in the city. They also vaccinated girls to prevent cervical cancer.

> We mobilize the city's school communities and raise awareness about common NCDs and their risk factors. And as part of health campaigns, girls over the age of nine are being vaccinated to prevent cervical cancer. (HEW2-IDI)

On the other hand, most experts argued that they had difficulties conducting effective and sustained social mobilization campaigns because of a shortage of financial and human resources. Experts clarified that while there were funds to reduce NCDs, financial and human resources allocated to health promotion targeted at preventing and controlling NCDs were insufficient.

> Although we have tried to raise awareness about the negative impact of NCDs and associated risk factors, it has not been easy to carry out continuous, effective, and sustainable campaigns and social mobilization due to budget, time, and staff constraints. For example, to visit different places and interact with the community, I need at least my transportation costs to be covered, but this is not the case in our situation. Moreover, in contrast to infectious diseases, funding for NCDs is insufficient despite their prevalence in urban and rural areas is alarmingly increasing. I will say again that we were unable to cover all cities, zones, and woredas because there are only three NCD experts in the entire region. All these limitations imply that it is challenging to accomplish the intended goals. (NCDs exp 1-IDI)

The importance of allocating sufficient budget and hiring enough skilled professionals for effective communication was underlined once more by NCD an expert who stated, "I believe that successful NCDs' communication cannot be achieved unless the problems of budget and manpower constraints are resolved" (NCD Ex3-IDI).

Training and Creating Model Households

For this study, a model household means a household that was trained by HEW and applied the packages with the help of the HEW. In this way, study participants mentioned that they provided awareness and disseminated health knowledge and skills to most household members, and then they created model households. However, in recent years, the coverage of training and creation of model households, especially for the prevention and control of NCDs, has been minimal since the training for the creation of model households did not address the prevention and control of NCDs or the content was scant.

> Some time ago, there was a lot of attention paid to creating model households, so most of our district community members have graduated as model households. We are using this as a strategy to offer health packages to local community members. However, training and creation of model households have been slowing down recently because the city's residents work all days of the week, and have no time to participate. More importantly, the training for creating model households does not address the prevention and control of NCDs, or its content is scant. Additionally, we do not get adequate training to train others on preventing and controlling NCDs and related risk factors. (HEW5-IDI)

Screening and Early Diagnosis

Screening and early detection were also identified as vital communication activities to reduce the impact of NCDs on the community. Most HEWs highlighted the importance of home-based screening at the community level besides increasing public knowledge of NCDs and encouraging households to adopt healthy lifestyles.

> Screening and early detection of the suspected communities of having NCDs helps to control NCDs alongside raising awareness and encouraging households to adopt a healthy lifestyle. For example, I screen individuals at risk of specific illnesses (more on diabetes and high blood pressure) as part of early diagnosis and discuss how to manage the diseases and related complications through home-to-home visits because hypertension remains the most common and preventable risk factor for cardiovascular disease. Moreover, the communities ask me to measure their blood pressure. I also check the improvement in the previous patients. (HEW8-IDI)

Cognizant, the researchers observed that in collaboration with NCD focal persons, HEWs called and screened people more on diabetes and hypertension as part of early diagnosis and management of NCDs. Besides, screening was part of different campaigns.

On the other hand, the screening and early diagnosis of individuals was not consistent and continuous across all health professionals due to a lack of testing machines. They then asked about symptoms and advised households to visit the nearest primary health center for further check-ups and treatments. Following that, most participants believed that the lack of facilities for hypertension, blood pressure, and diabetes screening would be a barrier to the implementation of home-based screenings.

Referral Services and Feedback

The study revealed that HEWs gave primary healthcare and referral services to their beneficiaries as they have been working at the community level to improve access to healthcare and promote health education. HEWs confirmed that they offered referral services to their beneficiaries to one of the nearby PHCs for diagnosis and treatment that connected health workers and urban health centers and gathered feedback that would escalate communication about NCDs. One of the HEWs explained,

> Based on the signs and symptoms reported by customers, we suspect a case and refer to one of the nearby health centers for further investigation and treatment if the case requires medical attention, especially if we do not have a testing machine. We have a referral form for this. (HEW3-IDI)

The study also found that HEWs collected feedback from health centers or beneficiary households; however, the feedback that the HEWs received was different from health center to health center, and there was improper handling of referral forms.

> We typically receive feedback from the individuals or the health centers to which the individual was referred. Nonetheless, the management of feedback and referral documents is poor. For example, due to improper handling, sometimes the feedback papers and referral forms disappear from the health center or the hands of the referred person. (HEW1_IDI)

Participants constructed that HEWs enabled their beneficiaries to access specialized care and essential healthcare services that fall beyond the scope of the primary care centers by providing referral services. They also played a vital role in bridging the gap between communities and higher-level healthcare facilities, ensuring that individuals received the appropriate care required to maintain and improve their health.

Follow-Ups and Rehabilitations Services

The study demonstrated that HEWs monitored both the beneficiary and the receiving healthcare facility after referring patients. They ensured the beneficiaries attended appointments, received appropriate care, and adhered to treatment plans. They also provided support and guidance during the post-referral period to help beneficiaries navigate the healthcare system effectively.

On the contrary, the study found that even if one of the main activities of the UHEP programs is the follow-up care and rehabilitation services for communities at risk of NCDs, there was no way to provide rehabilitation services because there were no protocols and standards for providing these services.

> Although I go to beneficiaries' homes daily to provide educational and health services, there is no protocol or standard that I follow to offer rehabilitation services. Furthermore, even if public education about NCD prevention and control is feasible, it is hard to determine whether awareness has been implemented. (HEW5-IDI)

Reporting Regular Activities

The participants mentioned that they reported their daily activities to their supervisors weekly. In turn, supervisors prepared monthly reports and delivered them to the person responsible for disease prevention and control in the city administration health office. However, even though all participants knew they had to report their work regularly and had a report form, they believed that regular reporting took a long time and was considered a waste of time.

> We all know that reporting our activities is one of our responsibilities, so we always collect our daily tasks, write summaries and reports, and deliver the reports to the supervisor. We all know that one of our responsibilities is to report our activities, so we collect our daily tasks, write summaries and reports, and deliver the reports to the supervisor. We also have a weekly basis meeting to discuss and evaluate our performances. Then, the supervisor compiles our work and submits it to the city administration health office NCD focal teams once a month. However, we believe multiple reporting takes time and is considered a waste of time. (HEW7-IDI)

Most significantly, one of the FGD discussants (the NCD focal) said, "I pay more attention to HIV/AIDS, tuberculosis, family planning, malaria, sanitation, and hygiene, and report on the mentioned health-related activities rather than NCDs because I have been asked frequently to report on the listed points" (NCD focal 2-FGD). He continued, "This implies that is why NCDs lack attention".

Working across Disciplines

Participants of the study were asked about their collaboration with other health and non-health sectors, and most participants believe that collaboration with diverse organizations is critical to promoting health and reducing adverse disease outcomes. An NCDs expert from the city administrative health office said they began working with volunteer health workers, community leaders, and teachers to train on NCDs and their prevention and control. However, this was reliant on external funding and was not sustainable.

> We work with youth associations, schools, community leaders, government and non-governmental organizations because health promotion requires the coordination of all stakeholders, including government, the health sector, other sectors and non-governmental organizations, industry and local authorities, media, and so on. However, we are working with stakeholders if we get additional external funding. (NCD Ex3-IDI)

On the other hand, almost all study participants stated that they struggled to discharge their responsibilities separately instead of cooperating and working with others. In this case, the researchers observed that although some stakeholder organizations recognized the burden of NCDs on health and development and tried to include them in their regular responsibilities, they did not have structured reporting.

The study participants again raised the lack of cooperation among multi-sectoral collaboration as a primary challenge for promoting health and reducing NCDs in the Amhara region. One of the interviewees noted:

> However, collaboration with several sectors outside the health sector, including education, agriculture, transportation, and industry, is essential for effective NCD prevention and control. For example, common behavioral risk factors like diet, exercise,

tobacco use, and alcohol use require strong collaboration from multiple organizations, but poor cooperation among multi-sectoral organizations may be due to communication barriers and priorities that differ among multi-sectoral organizations.

NCDs Communication Methods

Participants explained that one-to-one communication and advice through home-to-home visits was one of the main methods of communication with beneficiary households and was relatively effective. One of the HEWs articulated,

> I prefer the one-to-one communication/counseling method because, in most cases, communities refuse to participate in regular meetings or group communication and education sessions for various reasons. (HEW 5-IDI)

Participants also mentioned that communities were reluctant to participate in group meetings or discussions without receiving payment or supporting aid. They also reported that the community had a problem viewing everything as a political issue, which was incorrect. In light of this, the researchers confirmed that a community member complained that everyone comes to them for their reasons, such as to collect per diem or for political reasons, but not to educate the people about disease prevention and control. Significantly, another study participant mentioned that the requirement for social distancing posed by COVID-19 was one of the primary obstacles to conducting educational meetings or group discussions.

Furthermore, flyers, brochures, and posters, among other IEC/BCC materials, were used to inform, raise awareness, and inspire communities to adopt healthy behavioral changes aimed at prevention and control of NCDs. For example, an NCD focal explained, "We display posters to raise awareness about reducing salt consumption and distribute leaflets to encourage people to know about their health status" (NCD Focal5_FGD). An NCD expert added that the IEC/BCC materials included pre-determined facts like "Know your numbers!" and some messages about NCDs. They used standard Amharic and familiar local images. However, during field visits, even if the risks and incidences are worryingly increasing in the city and the region, except in two primary health centers (Dagmawi Minilk and Abay health centers), there were no NCDs-related messages displayed at least in places where people gathered and could access the messages.

On the other hand, participants reported that mass media and social media were relatively the least used communication tools for raising awareness about NCDs and the risks they pose. They explained that they sometimes used Amhara Media Broadcasting Corporation (AMeCo) to inform, raise awareness, and inspire communities to adopt healthy lifestyles and encourage them to change their behavior. However, the programs on NCDs and related issues were not consistent and continuous. One of the interviewees articulated:

> Sometimes, we use mass media, such as Amhara Media Broadcasting Corporation (AMeCo), to inform, raise awareness, and inspire the communities to adopt healthy lifestyles; for instance, on Amhara Television (ATV), experts discuss the advantages of physical activity in preventing and controlling NCDs during on Saturday morning program, "Sport for Health". Again, regional NCD experts provide announcements and other programs about NCDs and their associated risk factors. But, the TV shows and their contents are determined by their schedule. The same applies to the radio programs. (NCD expert 3-IDI)

According to a different expert (NCD expert 1-IDI), the company has begun broadcasting programs on NCDs and associated risk factors in partnership with the Amhara Regional Health Office. One of the programs is called "MikirKehakimwo", which translates to "Doctor's Advice". Nonetheless, the program addresses a variety of health-related subjects in addition to NCDs and how to prevent and control them. These imply that one of the NCDs may or may not be chosen as the subject of the discussion. As a result, it is difficult for the city community to schedule a specific time to listen or hear about options to prevent and control NCDs.

Regarding social media, most HEWs reported that they did not use social media platforms to communicate about NCDs and their associated risk factors because most of their beneficiary households did not have access to the internet and social media platforms.

> Most of us provide face-to-face education and communication about preventing and controlling NCDs and their risk factors to our beneficiary households because most beneficiary households do not have Internet access, so they do not use social media, such as Facebook and Telegram. (HEW5-IDI)

However, the two HEWs explained that they used Facebook and Telegram to communicate with some beneficiary households, especially those who need to monitor their blood sugar levels and hypertension. The researchers also observed that the city administrative NCD experts sometimes used social media to raise awareness of NCDs by posting annual and semi-annual reports and other necessary information on the office's Facebook and Telegram pages.

Discussions

The study provided important evidence on health communication practices in the fight against NCDs. It further showed that health professionals, especially HEWs played a vital role in providing health education and promoting healthy lifestyles mainly through regular visits to beneficiary households. Similarly, a USAID study found that more visits or interactions between health professionals and beneficiaries lead to higher changes in health.[41] Moreover, research by[42] shows that engaging HEWs in preventing and controlling NCDs would improve public access to primary healthcare for NCDs. However, health education and communication, primarily about NCDs were still limited in the city since health workers were not adequately involved in health education and awareness raising because of their workload with various tasks of different stakeholders. Studies conducted in various contexts have also shown that HEWs were occupied with other competing activities such as vaccination campaigns and the expectations of various stakeholders.[12,42–46] On this topic, the study also found that health education and communication for the prevention and control of NCDs are challenged by COVID-19 as health education and service delivery by health professionals are shifting towards the prevention and control of COVID-19. Likewise, a study by WHO on the impact of the COVID-19 pandemic on NCD resources and services confirmed that NCD prevention and treatment services have been significantly affected by the outbreak of COVID-19.[47,48] Allocation of higher-than-expected households to a HEW had also affected the NCDs' communication.[46,49] Shockingly, during the study time, conflicts in the region and the city have paralyzed the education and communication services for NCD prevention and management.

The study further showed that social and community mobilization was also one of the strategies to effectively implement communication in preventing and controlling NCDs, as community mobilization can positively influence people's attitudes and knowledge.[50] At the same time, it has been demonstrated that community mobilization could increase program acceptance and that community engagement is crucial to facilitate effective NCD prevention and control.[51] Consequently, sustained support and social mobilization are needed to achieve global and local commitment against NCDs.[28,52] However, community campaigns and mobilizations were not continuous, well-planned, and sustained, but they relied on national and international health days and other externally sponsored activities related to NCDs. The campaigns also appeared to suffer from budget and staffing constraints. Therefore, lack of financial support and labor shortages may affect the initiation and sustainability of NCD prevention and control activities.[46,53]

In addition, the study found that training and creating model households is one of the other strategies to support the implementation of NCD prevention and control. Similarly, studies conducted in different regions of Ethiopia have shown that health education and raising awareness on NCDs and their associated risk factors were successfully implemented through training and creating model households.[17,54] However, this study examined the coverage of training and creating model households, particularly on addressing NCDs was minimal, and HEWs were not well-trained in addressing NCDs and their risk factors. In addition, the Federal Ministry of Health of Ethiopia states that the coverage of training and creating model households does not incorporate NCDs prevention and control, or its content is limited[18.]

The study showed that screening and early detection of parts of the community at risk facilitated the prevention and treatment of NCDs. A study conducted in a different context showed that adequately trained health workers play a crucial role in the early detection, screening, and treatment of NCDs.[43] Furthermore, most HEWs believed that providing blood pressure and hypertension screenings to the community increases their acceptability.[12] However, in this study, screening and early diagnosis were not carried out continuously and consistently among all healthcare workers due to a lack of testing equipment and trained personnel. As a result, most participants believed that a lack of screening equipment and trained personnel obstructed the successful implementation of NCD communication. Likewise, inadequate screening and early diagnostic services and insufficient diagnostic and treatment options have been cited as major causes of high mortality from NCDs.[1]

The study also found that linking and providing referral services for further testing and treatment facilitated the implementation of NCD prevention and control. Conversely, the study revealed that the services were not well-organized and successfully implemented since the referral forms or examination documents sometimes disappeared at the health center or among referred households. The result supports an Indian study that found the management of referral services is frequently inconsistent and misguided.[15] The study also showed that reporting routine activities regularly to relevant authorities, such as supervisors and zonal health offices, facilitated the implementation of NCD prevention and control, but frequent reporting was viewed as a waste of time.

Furthermore, the study found that communities at risk for NCD should receive follow-ups and rehabilitation services, in addition to educating about NCDs and raising awareness of their risk factors. However, the service was poorly understood and executed because there were no guidelines or standards to follow when providing such services. Similarly, a study found that evidence-based rehabilitation treatments are poorly understood and implemented due to the complex context and limitations in low-resource settings.[55]

The study also found that several organizations tried to promote the negative impacts of NCDs and how to prevent and control them, but they worked independently. However, the literature confirms that effective communication about NCDs and bringing sustained behavioral change requires the active involvement of various stakeholders such as government, health sector, non-governmental organizations, religious leaders, community leaders, media, teachers, students, and different associations, healthcare workers and so on in bridging the gap between knowledge and practice.[56,57] This indicates that the prevention and control of NCDs require more attention and cross-sectoral participation of various stakeholders.[58]

On the other hand, the study found that various communication methods were employed to inform and raise awareness about NCDs and the associated risk factors. One-to-one communication was frequently used and comparatively effective among the others. In other words, individuals can change their existing unhealthy behavior through one-to-one counseling.[58] Likewise, interpersonal communication is widely employed to facilitate the efficient dissemination of about pandemics within the population and enhances two-way communication at the household and community levels.[56,57] Furthermore, education and training at the interpersonal level are essential for improving the intrinsic abilities of a person to avoid health-risk behaviors.[59] On the other way, a pilot study on peer health education for NCD prevention in Bangladesh, Ethiopia, and Palau showed that peer health education is an effective strategy for preventing NCDs in resource-limited settings;[60] however, in this study, the method was not common in dealing with NCDs.

The study revealed that IEC/BCC materials such as posters, brochures, leaflets, and postcards were used for NCD communication. The result is consistent with the finding that traditional media, such as leaflets and posters, are still effective in increasing knowledge and changing positive behavior in society, especially for adults.[61] Moreover, the study revealed that mass media and social media were rarely used in communicating about NCDs. Conversely, other study findings showed that mass media and social media are crucial tools in improving health education and information sharing[62] even if data on the role of social media for NCD prevention and management in LMICs is scarce.[62] The entire discussion has again shown that indigenous communication methods, such as coffee gatherings, religious places, and other social institutions, which are significant in addressing NCDs, have been ignored.

Conclusions

This study showed that the burden of NCDs is alarmingly increasing and becoming a primary source of social and economic costs at national and household levels in Ethiopia and capital of the Amhara region, Bahir Dar city. The alarming trend has led to various activities for the prevention and control of NCDs, such as health education and communication, training and creating model households, screening communities at-risk, referral for further investigation and feedback services, follow-ups and rehabilitation services for those communities at-risk and reporting the overall activities were performed, and made significant contributions to the prevention and treatment of NCDs. Despite the efforts, communication about NCDs and their negative impacts was underdeveloped in the city as it was not practiced continuously and consistently by all healthcare workers because of some challenges, such as overloading the HEWs with a variety of competing activities, assigning more households to one HEW, lack of testing equipment, shortage of budget and skilled professionals, weak collaboration among disciplines and organizations, COVID-19 and recurrent conflicts in the region as well the city. Therefore, efforts should be

taken to strengthen health professionals' commitment and proficiency in NCD prevention and control throughout the city and the region. In addition, various stakeholders should have to support and work together with HEWs rather than outsourcing additional tasks and simply requesting reports. Moreover, the one-to-one communication method was relatively successful in NCD and their associated risk factors communication. Therefore, it is vital to employ various communication methods, including social media, to reach diverse beneficiaries in addressing NCDs.

More importantly, NCD communication, in particular, and health communication, in general, did not receive the same priority as other health-related activities in the city. Therefore, continuous, consistent, effective, and sustainable education and awareness raising on NCD prevention and management of their negative impacts on health and social development is required since effective communication helps people make informed decisions and take an active role in their health sustainably. In addition, stakeholders from different sectors should also support and work with health workers to develop and communicate coherent messages because effective NCD prevention and control requires a "whole-of-society" approach. Budget and human resources should also not be overlooked for effective communication about NCDs. Furthermore, the present study was limited to Bahir Dar city; therefore, conducting studies on this topic broadly at regional and national levels is crucial for wider understanding about the interface between health communication and NCD.

Data Sharing Statement

On reasonable request, the corresponding author will provide all the data that support this study.

Ethical Considerations

The study obtained ethical clearance from the Institutional Ethical Review Board of Bahir Dar University (Protocol No.01/IRB/22) by the Declaration of Helsinki and other comparable international standards for research involving human subjects. A letter of support was also obtained from Amhara Public Health Institute (Ref. No. APHIHRTT/03/1325). All participants were aware of the aim of the study and their right to withdraw from participation at any time. Furthermore, all the participants were informed and agreed that the data gathered, including the quoted texts, would be kept anonymous and used in publications. Then, all participants signed written consent forms. Thus, we confirm that we incorporated all the ethical issues related to human subjects in the study.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

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